THE ONTARIO
CANCER INSTITUTE
INCORPORATING
THE PRINCESS
MARGARET HOSPITAL

Where...?

1986-87

ANNUAL REPORT

88-01631/

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The Ontario Cancer Institute, incorporating The Princess Margaret Hospital for CHMD, is Canada's largest centre dedicated to cancer treatment, research and education. Since it opened in 1958, the OCI/PMH has earned an international reputation for excellence.

Each year, approximately 5,000 new patients are accepted and treated at this 392-bed University of Toronto teaching hospital. There are more than 150,000 outpatient visits per year, as well as for treatment and follow-up.

In the research laboratories, more than 30 cancer scientists form the core of the Medical Biophysics Department at the University of Toronto. In addition to their own research, they also help to fund and provide laboratory space for graduate students and postdoctoral fellows.

WHERE...

WILL

WE

CARE FOR

PATIENTS?

WILL

OUR

RESEARCH

FLOURISH?

WILL

OUR

STUDENTS

LEARN?

In 1986-87 the government committed funds to rebuild The Ontario Cancer Institute incorporating The Princess Margaret Hospital.

But the major question was WHERE?

Throughout the year our efforts focussed on deciding which site will best support our staff in all aspects of our mission ... To Care, To Discover, To Teach

As this report went to press, the Honourable Murray Elston, Minister of Health announced the Government's support for our choice of the University Avenue site adjacent to Mt. Sinai Hospital, for rebuilding the OCI/PMH. His commitment of funds to rebuild on this site means staff can now confidently plan for the future.

1986-87

A COMMITMENT

IS MADE

TO REBUILD

"I am announcing today that at a projected cost of $158 million, Princess Margaret Hospital will be completely re-built on a new site…The Ministry will contribute $133 million."

The Hon. Murray Elston, Minister of Health

August 5, 1986

That day was a milestone in our year. After more than a decade of concern over increasing numbers of patients, we were at last given a commitment and could begin to plan the new hospital and research centre so urgently needed for this province.

The first major step has been to select a site which will provide the best overall environment for *all* our programs including care of patients, research and education. The OCI/PMH is a unique facility and is also a resource for many hospitals; we have had to balance the needs of many organizations with our own priorities.

Through the year, and particularly last fall, there were detailed discussions about several sites within Metro Toronto. But it was the consensus of our staff that patient care, research and educational programs would be enhanced as part of the multi-hospital and multi-disciplinary setting on University Avenue. As the year ended, the provincial government was considering our recommendations and the findings of an independent fact-finder before announcing the site for the new OCI/PMH.

In Ontario the formal cancer control system comprises both the OCI/PMH and The Ontario Cancer Treatment and Research Foundation (OCTRF). The commitment by the Ministry to rebuild the OCI/PMH and three other OCTRF centres in the province carried with it a condition which is moving us in yet another new direction – fundraising. Together with the OCTRF and the Canadian Cancer Society (Ontario Division) we are expected to raise $50 million of which $25 million will be earmarked for the new OCI/PMH and the remainder for the OCTRF centres in Hamilton, London and Sudbury. The OCI/PMH has benefitted from donations given to the PMH Trust (see page 20) but we have not actively sought funds in the past. And although our research division has received major grants from CCS through the National Cancer Institute, the hospital itself has never received CCS funds for equipment or expansion. This is therefore a new challenge and cooperative venture for all of us. We will need the help of many families and companies across the province to reach this goal and to ensure a strong, province-wide cancer control program.

But the commitment to fund a new building brings with it a double challenge. There is the excitement of looking ahead and planning, but there is also the responsibility of continuing care and programs at the current site for a number of years. Therefore, while the negotiations for a new site were underway, we were also taking several steps to strengthen both the OCI/PMH as a hospital and the provincial cancer system as a whole.

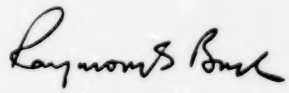
In December, the Hospital underwent its first survey by the Canadian Council on Hospital Accreditation and was given a two year award. This was an outstanding achievement for staff. The quality assurance programs developed in preparation for accreditation were particularly highlighted by the surveyors.

Although the OCI/PMH and OCTRF have worked together to set standards of care and achieve a uniform provincial program, there has been only limited development. Therefore, in the fall of 1986 both groups initiated a process to merge the two organizations under one board and form a unified provincial agency – The Ontario Cancer Agency. The process will require changes to the Cancer Act but interim steps may be taken to merge the boards. We are confident this change will significantly strengthen our ability to obtain and allocate resources and coordinate province-wide programs for patient care in the long term.

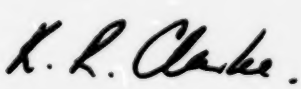
As we look ahead to the future, it is easy to refer to a new beginning for the Institute. But we must not forget that *each day* is also filled with new beginnings: many patients are given a renewed chance at life, students learn new skills to go out and help others and new ideas are developed to help us in the fight against cancer. Some of the people and ideas are presented in this report. They are why the OCI/PMH is here; and each is the result of the care, the vision and the dedication of our staff.

During the past year, a new Chairman of the Board was appointed by the Lieutenant Governor. On behalf of all the staff, I would like to acknowledge the support and contributions of Mr. Robert Stevens during his 16 years as Chairman. It was also my pleasure this year to welcome as our new Chairman, Mr. Kenneth Clarke, president and chief executive officer of the Great Lakes Group Inc.

Dr. Raymond Bush



Dr. Raymond Bush,
Director



Mr. Kenneth Clarke,
Chairman

Our staff is entrusted with the care of cancer patients from across the province. Last year, more than half of our 7,000 new patients travelled to Toronto. A program of outreach enables patients to come here for treatment, but return to their own physicians and communities as soon as possible. The OCI/PMH staff are specialists in diagnosing cancer and treating patients with radiation and chemotherapy. They are part of a team of physicians, nurses, dietitians, social workers, volunteers and other support staff who provide comprehensive care for every patient. They work at the leading edge of their fields to develop new methods of treatment that will improve both control of the disease and quality of life for the patient.

But the increasing number of patients needing their care has severely strained our facilities, our staff and the patience of all those waiting for treatment. It is only through the dedication and commitment of all the staff that extra time and extra space is somehow found for the extra patients seeking our care each year...

Radioactive "Seed" For Treating Brain Tumours

Tiny radioactive "seeds" are being implanted inside a common type of brain tumour in a new effort to prolong the life of patients with malignant astrocytomas.

"It is the most exciting new form of therapy for brain tumours and looks very powerful," said Dr. Norman Laperriere, a radiation oncologist at OCI/PMH. It is the first trial of its kind and is being done in conjunction with surgeons at Toronto Western Hospital.

About 55 per cent of brain tumours are malignant astrocytomas and are most common among middle-aged adults. But with current treatment, only about 5 per cent of patients are still alive 2 years after diagnosis.

In this study, half the patients receive the standard treatment – surgical removal of the tumour and radiation therapy from an external beam. The other half of the patients receive the standard therapy plus the radioactive seeds. The hope is that the implant will deliver stronger doses of radiation directly to the tumour but minimize damage to the surrounding tissue.

Dr. Laperriere said an important part of this study will be to evaluate the quality of life for the patient. It is just as important for patients to feel better as it is for them to live longer.

Seminoma of the Testes – Can We Give Less Treatment With The Same Cure Rate?

There is a 99 per cent cure rate for patients with Stage I, seminoma of the testes. This is one of the most successfully treated tumours, but one trial at OCI/PMH is studying whether treatment can be reduced without compromising patient survival.

Dr. Gillian Thomas, a radiation oncologist, says some physicians ask: "Why rock the boat when treatment is so successful?"

But she is convinced that the high cure rate can be maintained while sparing many young men radiation therapy and possible side effects such as infertility.

She said this disease follows a very distinct path. Stage I is limited to the testes while Stage II involves lymph nodes in the abdomen. Currently all patients have the primary tumour in the testicle removed by surgery and receive radiotherapy "just in case" there is undetected spread to the lymph nodes. Among the small number who relapse, additional chemotherapy is very successful. In Stage I seminoma, only one patient in 100 dies from the disease.

Dr. Thomas said new diagnostic tests are very accurate for testing the lymph nodes and make it safer to "watch" patients. In her study, Stage I patients who show no spread to the lymph nodes do not receive radiotherapy. Instead they are carefully and frequently tested, and will only be given additional treatment if the cancer reappears. She expects these patients to respond as well as patients with disease in the lymph nodes who are treated initially with standard therapy. So far two of her patients have relapsed but both are alive and well after radiation therapy.

"They treated me like a friend, not a patient."

This past summer was very special for Janet Lyons – she had a "second chance" to do ordinary things most of us take for granted. She and her husband bought a wading pool for her 19 month old son and watched him squeal in delight.

Last year, Janet, 23, was diagnosed with acute lymphoblastic leukemia. She responded well to chemotherapy and went into remission. But she faced a difficult option. She could wait to see how long the remission lasted and try treatment if her disease returned. Or she could opt for a bone marrow transplant where healthy marrow cells from a donor are transfused to her in the hopes they will begin to function and produce healthy blood cells.

"The doctors and nurses explained everything very carefully," she said thinking back. "They made sure I understood everything and actually almost scared me, but I had three perfect matches (donors) in my family so I decided I must be meant to go for it."

After several weeks of tests and preparation Janet had her transplant in the spring and was kept in isolation for several weeks until her body's immune system began to function again.

"When you're in isolation you're alone and you're down sometimes," she said. "But the nurses were fantastic – they would come by and spend time with me."

"One even helped me figure out the pattern I was knitting for my son," said Janet. "They treated me like a friend, not a patient."

Janet progressed so quickly she went home to London, Ontario less than seven weeks after entering hospital.

While her son played around her feet Janet reflected: "I know it sounds silly, but I think I notice things more than before – the trees, and perhaps one flower tucked away in a corner. I even look forward to watching the sun rise and then set on another day I have been given through this transplant."

Fine Tuning Diagnosis Helps Improve Treatment for Non-Hodgkin's Lymphoma

Available treatments have not really changed, but PMH physicians are starting to see an improvement in disease control for patients with localised non-Hodgkin's Lymphoma by changing the way they select treatments for patients.

The non-Hodgkin's lymphomas are a "mixed bag" of cancers of the lymphatic system. Conventionally, when tests indicate the tumour is localised, patients receive radiation therapy. Unfortunately, these tests fail to show that in about half of these patients the disease has begun to spread, meaning chemotherapy would be a more appropriate treatment. This raises the difficulty of knowing who may be safely treated with radiation and spared the side-effects of chemotherapy; and who will benefit from chemotherapy with or without radiation.

PMH doctors have gone back over the data of hundreds of patients treated here in the past looking for clues to predict who does well with radiation alone, and who requires chemotherapy for optimal control when the tumour appears to be localised. What they found is that relatively simply described characteristics such as age, bulk of the tumour and location of the sites, can define those patients who do well with radiation alone and who requires chemotherapy.

Using this information to change the treatment approach is relatively new, but introducing chemotherapy in the initial management is already showing benefits for those patients who previously did not do well with radiation alone. The "fine tuning" approach also identifies those who will do well with radiation alone and can thus be spared the chemotherapy.

More Treatment Doses – Fewer Complications

How can the radiation dose to a tumour be increased but damage to surrounding tissues be kept to a minimum?

Traditionally, the radiation oncologist decided on a total dose and spread it over a period of weeks, usually delivering one treatment per day, five days per week. Recent clinical and experimental information suggests that late complications to many normal tissues are dependant on the dose per treatment as well as the total dose of radiation. By treating patients two or more times daily it may be possible to improve tumour control rates using higher radiation doses without increasing late complications to normal tissues. Since it means fewer patients can be treated during a day and demands on the machines are already heavy, PMH physicians feel a full clinical trial should be done to see if the benefits claimed for this approach can be demonstrated for our patients.

During the past year they did a feasibility study on a group of patients with cancer of the pharynx and larynx. The results were encouraging and it is now hoped that PMH, where the largest number of head and neck patients in North America (more than 600 patients per year) are seen, can mount a clinical trial to test this approach when more treatment time is available. This may be possible next year when new radiation therapy machines are installed.

Pain Pumps Give Patients More Freedom

A small, computerized portable pump, which delivers a constant dose of pain-relieving narcotic, was introduced this year to give patients more freedom and comfort.

"It gives patients a tremendous sense of freedom," said Dr. Frank Adams who arranged for two of the $3,000 pumps to be donated by their maker Pharmacia/Deltec. "It allows patients to go home who may otherwise be stuck here."

Some patients with chronic pain cannot tolerate large oral doses of narcotics and must take it intravenously. Without the small Walkman-size pump, these patients would be confined to hospital with traditional intravenous needles and paraphernalia.

Volunteers – Friends To All Our Patients

"I give great praise to the Volunteers who always have a lovely smile and kind word for everyone and are so helpful in directing you to your destination," wrote one patient.

It would not be the same without our volunteers in their bright yellow smocks! These dedicated women, men and teenagers provide a valuable service as they help patients and their families be more comfortable during their stay. Volunteers help register patients, escort new patients to tests and clinics, provide craft programs and lovely flower arrangements, and manage the Gift Shop…to name just a few of their many activities.

When Frederick Downey learned he would have to travel to The Princess Margaret Hospital from his home in Sault Ste. Marie for six weeks of radiation therapy, he was a bit unsure about what lay ahead.

"I didn't know what to expect," he said. "A northern travel grant paid for my trip but I thought I'd be in the hospital."

"My wife was coming with me and we thought we'd have to find a hotel or place for her to stay. We never dreamed that we would be able to stay together here in the Lodge."

The Princess Margaret Hospital Lodge is a 105-bed hotel-like facility adjacent to the hospital. Patients from out-of-town who are receiving out-patient treatment can stay here at no charge. A spouse or relative can also stay with them and have meals for a daily fee.

"When you find out you have cancer and you have to come here it's important to be able to have your family close by," said Mr. Downey. "You can talk things over and have their support – the togetherness is important."

"With all the patients it's like a big family here. The staff are very helpful and supportive."

Like many Lodge patients, Mr. Downey can get out and enjoy activities around the city after his daily treatment.

"My wife and I go out every day and enjoy ourselves," he said. "The volunteers had a marvellous BBQ one day and they arrange many outings for us to places like Ontario Place and the CN Tower. In some ways it's almost been like a holiday for us."

Exploring new frontiers in the causes of cancer, its diagnosis and the care of patients is an integral part of our mission. The OCI/PMH combines both a hospital and research institute under one roof. This brings scientists and doctors together in an atmosphere that encourages joint studies and exchange of information. There are two research divisions, Biological Research and Physics, where scientists conduct a broad range of both fundamental and applied research programs related to cancer.

Ultrasound Imaging

The first step towards treating cancer patients successfully is an accurate diagnosis of their disease. Dr. John Hunt and Dr. Stuart Foster are studying several aspects of imaging with ultrasound and are just one of several teams in the Physics Division studying different imaging techniques.

First, they are trying to gain a better understanding of the physics of how ultrasound interacts with both normal and abnormal tissue.

We want to determine if there are any properties of abnormal tissue that cause variations in the scattered ultrasound wave that can be used as a means of characterization," says Dr. Foster.

"If we can characterize these differences in a quantitative manner, then the next task is to find ways to use the information in imaging."

"Right now, we tell the difference between normal and abnormal tissue primarily by its "geography" – if the shape or position of an organ isn't right on the scan, it can indicate the presence of a tumour," he says.

Once the physical basis of new imaging methods have been tested, the scientists then collaborate with outside companies to determine how the "ideas" can be turned into useful and marketable pieces of equipment.

The research group led by Dr. Foster and Dr. Hunt has worked through those stages and developed a high resolution scanner (see photo) for ultrasound breast imaging. The equipment has been part of a clinical trial at Women's College Hospital since 1983. This technology will be useful in many areas but this trial focusses on breast cancer detection.

Dr. Foster has recently completed the development of a new prototype scanner in collaboration with Hewlett Packard Corporation. This system, which is intended for realtime radiological imaging, is based on the "annular array", a technology pioneered by the OCI ultrasound group in the early 1980s.

Dr. Foster says the group is now starting in a new direction to look at ultrasound microscopy which will have applications for studies of an *in vitro* tumour model and other biological systems.

Oncogenes – Genes Which Cause Cancer

There are certain proteins or "gene products" which scientists have found in both normal and abnormal cells. However in the abnormal or cancerous cell, the protein may be structurally changed or in a different quantity. Since cancerous cells appear to have lost their normal mechanism for controlling cell growth, scientists presume these various proteins are somehow involved in the cell regulation. Learning more about this regulation is the focus for many scientists. They want to learn about the role of these different proteins in *normal* cell growth and determine how and why the protein and its role is changed.

These proteins are produced by genes. "Oncogenes" is the name for the family of genes which scientists know can transform normal cells into cancerous cells. For example in a cancerous cell there may be up to 200 times the normal quantity of a particular protein.

Dr. Sam Benchimol's research team is studying one of those proteins called "p53" and the p53 gene which produces it. High levels of this protein are found in a wide variety of cancerous cells in both mice and humans. Therefore they are trying to determine both the role of p53 in normal cells, and its role during uncontrolled growth in cancerous cells.

"One of the rare things about the OCI/PMH is that *every* scientist is involved in a program which is having an impact in their field of research," says Dr. Christopher Paige, one of the newest scientists in the OCI/PMH research divisions. "It means that the overall quality and level of research is very high."

Dr. Paige, an immunologist, did post-graduate work at the Memorial Sloan-Kettering Cancer Centre in New York and has been a research scientist at the renowned Basel Institute for Immunology in Switzerland for the past seven and a half years.

One of the factors which attracted him to the OCI/PMH is the commitment here to basic research.

"The philosophy of OCI recognizes the essential role that basic research plays in an overall strategy for understanding, preventing and treating cancer," he said. "This means they do not say 'we need someone to research this topic'. It means they seek scientists who broadly qualify within the cancer field, but then give them the academic freedom to pursue their area of expertise. The result is that OCI has a core of excellent scientists who in turn attract good students, post-doctoral fellows and good speakers for lectures. They are also invited to attend conferences and meetings at other centres around the world."

"However there is one drawback here – the physical facilities. It is so crowded it impedes the informal contact and discussions between staff and students that are so important for exchanging ideas. But hopefully the new centre that is planned will solve those problems."

For example, one might think that high levels of the p53 might be the result of the genes producing more p53 than usual. Instead they have found that in the tumour cells, p53 is more stable. This p53 seems to have a slightly different structure which allows it to last longer and accumulate in the nucleus. Although Dr. Benchimol is using mouse studies as a model, his group have also seen this in human lymphoma cell lines. The answer to the question "why" is of major interest to this group.

But like many projects, the problems and answers are not straightforward. During their studies of erythroleukemia in mice, they suddenly noticed that half their mice with tumour cells did *not* have the expected high levels of p53. In fact, they had no detectable p53 at all! This paradox, first noticed in this lab, is also presenting challenging questions on their way to increasing our knowledge about the regulation of cell growth.

Growth Control and Cancer in Epithelial Cells

Every part of our body is covered or lined with epithelial cells. About 90 per cent of all cancers arise from these cells, e.g. lung, breast, colorectal and ovarian cancer. But they are among the most complex and least understood tissues.

Epithelial cells, such as those in the intestine, are constantly lost at a high rate and must be replaced. The cells that create these new cells are the stem cells. In healthy tissues, stem cells divide only enough to replace lost cells; but in a tumour, the cell growth is out of control. The stem cells are therefore an important target for cancer therapy.

Dr. Ron Buick's group has spent a number of years identifying the stem cells in human ovarian cancers and studying their properties; they are now focussing on breast and intestinal epithelium. Determining the mechanism whereby these stem cells grow out of control is an important focus of many research programs.

"We must first understand how these cells *normally* regulate themselves before we determine the mechanism for abnormal growth," says Dr. Buick. "It has become clear that the primary way cells become cancerous is through a mutation of the gene or genes that normally control the growth of stem cells."

"The challenge for us is to define the set of genes which control growth in different types of normal epithelial cells and which correspond to common human cancers. With that information, we will have defined the genes which are targets for cancer-causing mutations."

Biology Awarded $1.57 Million for 3 Years

"The Biology Division of the OCI maintains its international profile and reputation as a centre of excellence in studies of hematopoiesis and immunologic function. In recent years, the Division has made a conscious effort to move more and more forward in the discipline of molecular biology... The review team found a centre of excellence with a number of very talented investigators."

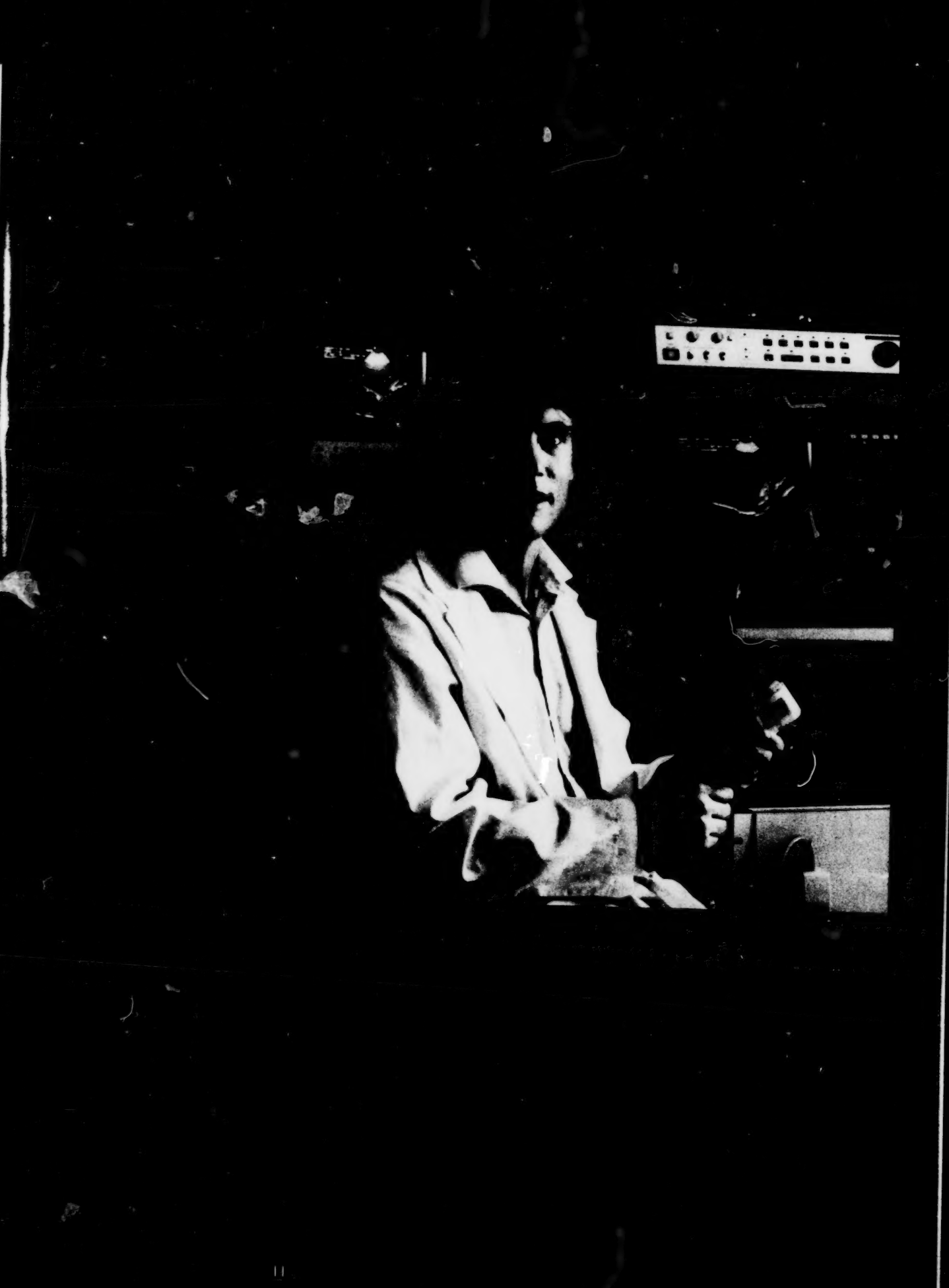
These are some of the comments from a report prepared by the National Cancer Institute on the OCI/PMH Biology Division. Every three years, the research programs of scientists in the OCI/PMH Physics and Biology Divisions are reviewed in depth by teams of international scientists. The Biology Division was reviewed last fall. Based on this rigorous evaluation, the National Cancer Institute determines the level of funding to be awarded to the scientists. The Biology Division scientists have been awarded $1.57 million per year for the next three years to continue with their work.

From Student to Staff Member....

"To me, the OCI is special because of the environment here... In industry you're isolated; but here there is access to biological research which gives you a different perspective, and there is access to the clinical setting and the feedback you receive from staff," says Dr. Stuart Foster, a scientist in the Physics Division whose special interest is in ultrasound. "Those of us working in imaging, seem to work particularly well together and collaborate on projects."

Dr. Foster, like several scientists at OCI, originally arrived here as a student. In 1974 he applied to the University of Toronto Medical Biophysics Department to do his Master's degree because it would give him the opportunity to do his research work at The Ontario Cancer Institute. Six years later when he had finished his Ph.D., his talents led to the offer of a staff position in the Physics Division.

Dr. Foster, along with those with whom he has collaborated, has won several awards for his work, but he points to all the other staff and students for the important role they play in making good research possible: "This institute has excellent support facilities which, I admit, we sometimes take for granted, but which are not always available elsewhere... such as the electronics shop, machine shop and good computer facilities."



As OCI/PMH staff care for patients and open new doors in research, the next generation of scientists, physicians and support staff are right there and learning. Each year undergraduate and graduate students from a diverse range of science and health care programs participate in the many education programs offered at OCI/PMH...

Tomorrow's Scientists

The 33 senior scientists in the OCI/PMH's Biological and Physics Research Divisions, are part of the academic life of the University of Toronto through U. of T.'s Department of Medical Biophysics. In addition to their own research, OCI/PMH scientists form the core of research and thesis supervisors, and lecturers for 48 graduate students and 34 post-doctoral fellows based at the OCI/PMH.

The graduate students pursuing their Master of Science (M.Sc.) and Doctor of Philosophy (Ph.D.) in Medical Biophysics work with the OCI/PMH scientists carrying on much of the investigative, original research in cancer. Their research may range from the fundamental level of molecular biology and genetics, through immunology and tumour biology to the physics and application of imaging via ultrasound, electron microscopy, computer tomographic scanning (CT) and magnetic resonance imaging (MRI).

The post-doctoral fellows are Ph.D. or M.D. graduates from many universities who bring with them a national and international flavour and expertise. This collaboration coupled with scholarly exchanges of knowledge by our staff and students at scientific conferences, is the signature of modern cancer research.

Through these programs, the Department of Medical Biophysics ensures that as OCI scientists carry out the mission-oriented, applied cancer research for the immediate future, we also provide forward-looking, fundamental educational opportunities for the scientists of tomorrow.

Staff Publish Oncology Textbook

The "Basic Science of Oncology" was published in February 1987 and has already been adopted as a textbook for oncology courses in Canada, the United States and Europe.

Dr. Ian Tannock, a medical oncologist, and Dr. Richard Hill, a scientist in the Physics Division, co-edited a textbook about the basic science underlying cancer. The idea for this text grew out of their need for reference material for a course they have offered to oncology residents, graduate students and fellows at OCI/PMH for several years.

The authors of the different chapters also teach those segments of the course and most are from the staff of the OCI/PMH.

Canada's Leading Centre For Training Oncologists

The OCI/PMH in conjunction with the Faculty of Medicine at the University of Toronto is the leading Canadian centre for training specialists in both medical and radiation oncologists. More than half of the Canadian-trained radiation oncologists currently in practise across Canada, received their specialty training at Princess Margaret Hospital.

Specialization in either discipline requires many years of postgraduate training after medical school. During 1986-87, there were 25 residents and fellows in radiation oncology and 16 residents and fellows in medical oncology. Due to overall reductions in the number of postgraduate medical positions funded by the Ministry of Health across Ontario, there were 6 fewer medical residents than last year. Next year there will be one less radiation oncology resident than during 1986-87.

The Medical Oncology Department also offered elective or selective programs to 23 undergraduate medical students.

In other departments there were residents in the Pathology and Nuclear Medicine programs.

As in all departments with teaching programs, the medical staff give lectures and provide individualized teaching to all the residents and fellows in addition to caring for patients and conducting clinical research.

The Challenge of a Residency in Radiation Oncology

Last year, Dr. Dorianne Rheaume was the Chief Resident in Radiation Oncology among 25 residents and fellows. After 4 years of medical school, one year as an intern, 2 years as a resident in Internal Medicine and three years at Princess Margaret Hospital, she is now almost ready to write the Royal College of Physicians and Surgeons fellowship exams in radiation oncology.

She admits that the demanding program has been a "trial by fire"! She has had to add technical subjects such as physics and radiobiology to her clinical knowledge, and yet still be able to balance all that with the warmth and individual attention vital to patient care.

"The very caring and positive attitude of staff here towards patients is the intangible that you benefit from in addition to the high class training," says Dr. Rheaume.

"The multidisciplinary clinics attended by radiation oncologists, medical oncologists and surgeons ensure comprehensive patient management decisions," she said. "And all the residents have a very wide exposure to patients."

Since many physicians are involved with studies and clinical trials, she says this too adds another dimension to the education of all the residents.

Striving For Excellence!

Despite the challenges of space and equipment shortages, staff have successfully undertaken two major programs to ensure that OCI/PMH provides the highest standards of care with the resources available.

During the past year, staff implemented a hospital-wide quality assurance program *and* underwent accreditation for the first time.

OCI/PMH Awarded Accreditation

The Canadian Council on Hospital Accreditation (CCHA) awarded the hospital accreditation for two years following an accreditation survey in December.

This is an outstanding achievement for PMH since hospitals often receive just a one-year award after the first survey. This survey was done voluntarily to give us the opportunity to be measured against national standards for hospital operation. Since PMH is a specialty hospital for cancer care, standards were not available for some of the special functions such as radiation therapy. Our staff are therefore working with the CCHA to develop standards for such functions.

In their summary the surveyors wrote:

"It is recognized that the Ontario Cancer Institute faces very difficult decisions concerning its future location, and uncertainties because of legislation and the inability to effect updated bylaws. As well, the consequences of lack of space cannot be ignored.

In spite of this, the Institute continues to strive for high quality patient care and significant research. The Board, the medical staff and the scientific staff and the Administration are encouraged, in spite of all the difficulties, to continue their efforts to improve the organization.

Quality Assurance – An Integral Part of Excellence

The hospital-wide quality assurance program developed over the past two years is an integral part of our efforts to reach for higher standards. It is more than just numbers and quality control. It provides a way of seeing how well individual departments and the organization as a whole meet objectives. And it helps to identify problems which need to be resolved.

While many departments and programs have had individual systems in place to evaluate their work, the quality assurance program ties all of these together and makes each department part of a coordinated whole.

Department heads report regularly to the Quality Assurance Committee to review the results of their programs and outline improvements which will be implemented to correct any deficiencies identified.

New Library For Patients and Families

A lending library for patients and their families, staffed daily by volunteers, was opened in the Sherbourne Lobby in February.

"This library is intended to support the information which staff offer to patients and their families about cancer treatment and outcomes," says Patti Payne, Department of Nursing, who coordinated the development of the library.

The library was established by the Patient Education Committee through donations from the Auxiliary, individuals, companies and publishers. A wide selection of free pamphlets from the Cancer Society is also stocked in the racks.

Radiotherapy School Expanding

The OCI/PMH developed plans this year to expand its School for Therapy Radiographers. Since patient numbers are increasing and more radiotherapy machines are being installed across the Province, more skilled staff are needed to operate them. To meet future requirements, it is estimated that the number of graduates will need to be doubled.

The OCI/PMH school is the largest of its kind in Canada and is taking the initiative to try and ensure there will be enough skilled radiographers to staff the growing number of treatment machines. The School, currently located in a house behind the Hospital, provides a 32-month program which includes both classroom instruction and clinical training. A maximum of 26 students from Saskatchewan, the Atlantic provinces and Ontario come to OCI/PMH for classroom instruction before returning to their own centres for the clinical part of the course. An average of eight students per year receive their clinical training at OCI/PMH. Staff from many different departments at OCI/PMH are integrally involved in all aspects of the students' training.

The excellence of an organization is the sum total of the excellence and dedication of the individual staff members. Last year these individuals were honoured in various ways by their international peers. This list also includes our own recognition of all the dedicated staff and volunteers who last year marked their 25th year at OCI/PMH. They join the 60 other members of OCI's Quarter Century Club...

Dr. F. Adams (Medicine)
Distinguished visiting Professor in Neuropsychiatry and Behavioral Neurology. United States Air Force Medical Centre, San Antonio, Texas. 1986.

Dr. P.J. Fitzpatrick (Radiation Oncology)
John C. Maier Memorial Lecture and Visiting Professor, University of Virginia, Charlottesville, Virginia. May, 1986.

Dr. P.J. Fitzpatrick (Radiation Oncology)
American Cancer Society Travelling Professor. Loma Linda University, Loma Linda, California and University of Southern California, Los Angeles, California. October, 1986.

Dr. P.J. Fitzpatrick (Radiation Oncology)
President, Memorial-Sloan Kettering Radiation Alumni Society, New York. December, 1986.

Dr. S. Foster and Dr. F. D'Astous (Physics)
Ultrasound in Medicine and Biology Prize for paper judged to be most innovative and of highest scientific quality. 1986.

Dr. R. Gronostajski (Biological Research)
Medical Research Council of Canada Research Scholarship. April, 1986.

Dr. R. Hasselback (Medicine)
50th Anniversary Award for significant contribution to growth and development of the Society. Canadian Society of Laboratory Technologists. 1986.

Dr. V. Ling (Biological Research)
Chairman, Gordon Research Conference on chemotherapy of Experimental and Clinical Cancer. New London, New Hampshire. July, 1986.

Dr. D.N. Miyamoto (Biological Research)
Research Scholar of the National Cancer Institute of Canada. July, 1986.

Dr. W.D. Rider (Honourary Staff Member)
Gold Medal. The highest honour bestowed by the American Society for Therapeutic Radiology and Oncology. 1986.

Ms. E. York (Social Services)
Appointed member, Metropolitan Toronto District Health Council. July, 1986.

Students, OCI/PMH School For Therapy Radiographers
Percey Ghent Memorial Award for best display. Ontario Association for Medical Radiation Technologists. 1987.

OCI/PMH 25-Year Service Awards 1961-86
Dr. R. Alison, Medical Oncology
Mrs. M. Alleyne, Operating Room
Mrs. R. Collings, Volunteer (we are sorry to note she has since died)
Mrs. P. Howard, Nutrition Services
Miss E. Ivers, Volunteer
Mr. R. Kuba, Physics
Mrs. E. Pugri, Glasswashing

9 Kenora
1 Rainy River
27 Thunder Bay
132 Cochrane

Table I New patients referred to The Princess Margaret Hospital by county or district of residence April 1986 – March 1987

Malignant & Non-malignant

Totals	1986-87	1985-86
Ontario	6516	6805
Outside Ontario	105	112
Outside Canada	68	78
Total	6689	6995

Table II Cases of malignant disease
Distribution by site of malignancy and sex
April 1986 – March 1987

Site		
Head and neck		158
Total 223		65
Ear, nose, throat		274
Total 356		82
Gastrointestinal		407
Total 689		282
Respiratory		678
Total 994		316
Skin		369
Total 646		277
Breast		9
Total 1267		1258
Gynaecological		0
Total 686		686
Genitourinary		569
Total 635		66
Lymphatic, haematopoietic		359
Total 655		296
Other sites		304
Total 552		248

Male	3127
Female	3576
Total	6703

Table III New patients with malignant disease
Distribution by age and sex
April 1986 – March 1987

Age		
0 - 19		36
Total 50		25
20 - 29		111
Total 200		89
30 - 39		167
Total 464		297
40 - 49		267
Total 788		521
50 - 59		640
Total 1333		723
60 - 69		881
Total 1754		873
70 - 79		651
Total 1241		590
80 - 89		183
Total 353		170
90+		17
Total 45		28

Male	2923
Female	3316
Total	6239

Table IV Total Outpatient Visits to PMH
April 1986 – March 1987

	1986-87	1985-86
New patient registrations in OPD	5,225	5,331
Follow-up visits in OPD	59,839	58,961
Day care	6,523	4,112
External beam XRT treatments to outpatients	64,455*	65,491**
External beam XRT treatments to inpatients from other hospitals	2,850	3,083
Visits to cell separator	1,252	1,880
Total	140,144	138,858

*Does not include 3,154 treatments given at Toronto-Bayview Regional Cancer Centre during April to August.

**Does not include 5,066 treatments given at Toronto-Bayview Regional Cancer Centre July 85-86 when the Betatron was removed.

Table V Number of Treatments Given in the Radiation Therapy Department
April 1986 – March 1987

External Beam	1986-87	1985-86
Superficial x-ray	1,145	1,415
Deep x-ray	2,061	2,764
Cobalt	41,634	44,149
Linear accelerators:		
Low energy	8,652	9,374
High energy	28,567*	25,831**
Betratron	–	1,933***
Total	82,059	85,466
Inpatient treatments	14,450	14,909
Outpatient treatments	67,609	70,557
Total	82,059	85,466
Sealed Sources		
Intracavity	247	243
Interstitial (needles, wires & seeds)	30	31
Strontium applicators	65	119
Total	342	393

*Includes 3,154 treatments given at the Toronto-Bayview Regional Cancer Centre during April to August.

**Includes 5,066 treatments given at the Toronto-Bayview Regional Cancer Centre since July 1985.

***Betatron was removed from service July 1985.

Table VI Services at Peripheral Clinics
April 1986 – March 1987

Clinic	New Patients Seen		Peripheral Clinic Visits*	
	Malignant	Other	Malignant	Other
North Bay	165	12	1433	59
Owen Sound	31	0	669	15
Peterborough	15	0	1801	30
Sault Ste. Marie	31	0	652	7
Sudbury	20	0	1074	12
Timmins	51	11	1001	42
Total	313	23	6630	165

*Including the visits when patients are first seen at peripheral clinics, as well as subsequent visits for new and old patients.

Individuals, corporations and foundations provide valuable ongoing support for research and clinical activities at The Ontario Cancer Institute incorporating The Princess Margaret Hospital. On this page we acknowledge all who have contributed directly to OCI/PMH during the past year.

In the coming year, we will also embark on a joint fundraising campaign with the Cancer Society (Ontario Division) and The Ontario Cancer Treatment and Research Foundation to raise $50 million towards the capital cost of rebuilding the OCI/PMH and treatment centres in Hamilton, London and Sudbury...

Basic support for the clinical and fundamental research carried out at The Ontario Cancer Institute is provided by The Ontario Cancer Treatment and Research Foundation and the Province of Ontario. In addition, research grants, contracts, fellowships and scholarships from the following sources have provided the further support necessary for research programs.

Adria Laboratories
Alberta Heritage Foundation
Banting Research Foundation
Bristol Myers Company
Canadian Medical Association
Cancer Research Institute
C.I.D.A.
Crusade Against Leukemia
Cyanamid Canada Inc.
Hoffman La-Roche Ltd.
IMREG Inc.
Janssen Pharmaceutica Inc.
Leukemia Research Fund
Massachusetts Institute of Technology
McGill University
Ministry of National Health and Welfare
National Cancer Institute of Canada
National Cancer Institute, National Institutes of Health (U.S.A.)

Ortho Pharmaceutical
Quadralogic Technologies
St. Michael's Hospital
Schering Canada Inc.
T Cell Sciences Inc.
Technicare Corporation
University of Toronto
The Upjohn Company of Canada
Warner Lambert Ltd.

Substantial Donations to the PMH Trust

Our research and clinical activities are assisted by bequests and donations to the PMH Trust. We wish to thank all who have donated to the PMH Trust during the past year.

Mrs. B. Abbruzzese
Mr. R. Ackison
Mr. & Mrs. R. Adams
Mr. Maxwell J. Allen
Ampex Canada Inc.
Argyrides family
Mrs. A. Armstrong
Atkemix Inc.
Atlantis Film Ltd.
Mr. Norman Auslander
Auxiliary of The Princes
Mr. H.J. Bain
Mr. R.A.J. Bauer
Mr. Edward Bernais
Miss Janet Billig
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Board of Trade Club – Metro Toronto
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Mr. J.K. Livingston
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Lady MacDonald Auxiliary Lodge #68
Mrs. Y.J. Mark
Mr. & Mrs. D. Martel
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Mr. & Mrs. R.J. McAuley
McDonnell Douglas Canada Ltd.,
Union Salaried Employees Charity Trust
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Metro Textile Inc.
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Rev. Father J. Nelligan
Nelson Arthur Hyland Foundation
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Mr. J. Nicholls
Mrs. A. Nichols
Ontario Egg Producers' Marketing Board
Ontario Hydro, Employees Charitable Fund
Order of the Eastern Star, Corinthian Chapter #12
P & H Foods
Panache Design Ltd.
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Parrish & Heimbecker
Mrs. Hazel Penelton
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Mr. & Mrs. L.H. Williams
Ms. Katherine Williams
Workman's Circle Social Club

THE ONTARIO

CANCER INSTITUTE

FINANCIAL STATEMENTS

MARCH 31, 1987

THE ONTARIO

CANCER INSTITUTE

BALANCE SHEET

March 31, 1987 (with comparative figures at March 31, 1986)

Assets	1987	1986
Current:		
Cash	$ 1,368,248	$ 564,879
Short-term investments, at cost including accrued interest (which is equivalent to market)	11,686,065	4,778,900
Accounts receivable –		
Patients' accounts	944,380	954,455
Ontario Ministry of Health	2,229,510	1,997,404
The Ontario Cancer Treatment and Research Foundation		
Other	376,697	1,228,844
Research grants receivable	1,173,136	1,260,092
Due from P.M.H. Trust (note 4)	201,803	
Inventory of supplies, at cost		125,355
Prepaid expenses	946,683	706,980
	201,670	257,520
Total current assets	19,128,192	11,874,429
Property, at cost:		
Land	3,033,365	3,133,365
Buildings	20,778,073	20,390,878
Equipment and furniture	26,484,848	23,285,767
	50,296,286	46,810,010
Less accumulated depreciation	24,906,430	22,701,508
	25,389,856	24,108,502
Construction in progress	4,331,373	2,150,295
	29,721,229	26,258,797
	$48,849,421	$38,133,226

AUDITORS' REPORT

To the Members of
The Ontario Cancer Institute:

We have examined the balance sheet of The Ontario Cancer Institute as at March 31, 1987 and the statements of operations, fund balance and changes in cash position for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests and other procedures as we considered necessary in the circumstances.

In our opinion, these financial statements present fairly the financial position of the Institute as at March 31, 1987 and the results of its operations and the changes in its financial position for the year then ended in accordance with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

Clarkson Gordon

Toronto, Canada,
June 5, 1987.

Chartered Accountants

Liabilities and Fund Balance	1987	1986
Current:		
Accounts payable and accrued liabilities	$ 6,336,062	$ 5,694,866
Research grants received in advance		166,419
Due to P.M.H. Trust (note 4)	57,148	
Capital grants received in advance (note 5)	8,712,692	2,496,127
Total current liabilities	15,105,902	8,357,412
Fund balance	33,743,519	29,775,814
(See accompanying notes)	$48,849,421	$38,133,226

On behalf of the Board:

L. L. Clarke.

Member

Bernice M. Thale

Member

THE ONTARIO CANCER INSTITUTE

STATEMENT OF OPERATIONS

for the year ended March 31, 1987 (with comparative figures for the year ended March 31, 1986)

	1987	1986
Revenue for patient care, research and education:		
Ontario Ministry of Health and others for patient services	$47,139,942	$42,277,847
The Ontario Cancer Treatment and Research Foundation	4,174,243	4,127,940
Other granting agencies	8,343,241	7,674,691
Recoveries and other income	3,030,744	3,136,442
	62,688,170	57,216,920
Expenses for patient care, research and education:		
Salaries and wages	43,669,172	41,328,713
Supplies and other operating expenses	18,513,725	16,114,291
	62,182,897	57,443,004
Excess (deficiency) of revenue over expenses before depreciation	505,273	(226,084)
Depreciation of buildings	517,935	508,280
Depreciation of equipment and furniture	1,691,909	1,491,922
	2,209,844	2,000,202
Excess of expenses over revenue for the year	$(1,704,571)	$(2,226,286)

(See accompanying notes)

THE ONTARIO CANCER INSTITUTE

STATEMENT OF FUND BALANCE

for the year ended March 31, 1987 (with comparative figures for the year ended March 31, 1986)

	1987	1986
Balance, beginning of year	$29,775,814	$28,125,129
Deduct excess of expenses over revenue for the year	(1,704,571)	(2,226,286)
	28,071,243	25,898,843
Add grants for building alterations and equipment:		
Ontario Ministry of Health	4,656,742	3,120,212
The Ontario Cancer Treatment and Research Foundation	208,294	154,006
P.M.H. Trust (note 4)	67,896	325,827
Other	739,344	276,926
	5,672,276	3,876,971
Balance, end of year	$33,743,519	$29,775,814

(See accompanying notes)

THE ONTARIO

CANCER INSTITUTE

STATEMENT OF CHANGES

IN CASH POSITION

for the year ended March 31, 1987 (with comparative figures for the year ended March 31, 1986)

	1987	1986
Cash and short-term investments, beginning of year	$ 5,343,779	$3,197,179
Cash provided by (used in) operations:		
Excess of expenses over revenue for the year	(1,704,571)	(2,226,286)
Depreciation	2,209,844	2,000,202
	505,273	(226,084)
Changes during the year in –		
Accounts payable and accrued liabilities	641,196	(424,864)
Accounts receivable	717,072	476,519
Research grants received in advance	(668,222)	389,273
Other non-cash working capital items	(1,350)	(264,371)
	1,193,969	(49,527)
Cash provided by (used in) capital transactions:		
Capital asset funding	5,672,276	3,876,971
Capital grants received in advance	6,516,565	2,196,127
Capital asset acquisitions	(5,672,276)	(3,876,971)
	6,516,565	2,196,127
Net change in cash position during the year	7,710,534	2,146,600
Cash and short-term investments, end of year	$13,054,313	$5,343,779

(See accompanying notes)

THE ONTARIO

CANCER INSTITUTE

NOTES TO

FINANCIAL STATEMENTS

MARCH 31, 1987

1. Summary of significant accounting policies

(a) Basis of operating funding – Pursuant to the Health Insurance Act the Institute receives funds from the Ontario Ministry of Health (the "Ministry") to substantially cover its operating costs. Funds are received during the year based on a total amount approved by the Ministry in respect of the fiscal year. The portion of Ministry funding applicable to operations is credited to operating revenue in the year to which the grant applies. Any surplus or deficit arising from the difference between the Institute's actual operating results for the year and the amount approved by the Ministry is retained or financed by the Institute.

(b) Capital grants –
Grants received for capital purposes from the Ministry and other sources are credited to the fund balance as the related expenditures are made. Amounts received in advance of the related expenditure, including interest earned thereon, are deferred.

(c) Depreciation –
Although substantially all fixed assets acquired by the Institute are financed by the Ministry and The Ontario Cancer Treatment and Research Foundation, the cost of such assets is recorded in these financial statements and depreciated on a straight-line basis at the following annual rates:
Buildings – 2½%
Equipment and furniture – 5%, 6.6%, 10% or 20%

2. Tax status

The Institute is registered as a charitable organization under the Income Tax Act (Canada) and is therefore exempt from income tax and may issue tax deductible receipts to donors.

3. Pension Plan

The Institute has a voluntary pension plan for its employees. Based on the most recent actuarial valuation of the plan as at January 1, 1986, there is no unfunded liability.

4. P.M.H. Trust

P.M.H. Trust is a separate corporation without share capital and with its own Board of Directors. P.M.H. Trust receives and applies funds to assist the Institute in cancer research, education and treatment. The accounts of P.M.H. Trust are not included in these financial statements.

5. Commitments

Outstanding purchase orders for capital equipment amounted to approximately $3,940,000 at March 31, 1987. Capital expenditures for fiscal 1988 are expected to substantially exceed grants received to date.

6. Comparative figures

Certain of the 1986 comparative figures have been reclassified to conform to the presentation adopted in the current year.

MEMBERS OF THE STAFF

Director: R.S. Bush, M.D.

Clinical Services

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Department of Diagnostic Radiology

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I.F. Majesky, M.D.""
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Department of Pathology

Acting Chief:
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P. Warde, M.D.
J.L. Yeoh, M.D.

Clinical Associate
P. Chart, M.D.

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A.J. Cunningham, Ph.D.
R. Gronostajski, Ph.D.
R.M. Gorczynski, Ph.D.
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N. Miyamoto, Ph.D.
C. Paige, Ph.D.
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H.P. Webb, C.E.T.
M. Yaffe, Ph.D.

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M.V. Peters, M.D.
W.D. Rider, M.B.
T.C. Brown, M.B.

Administration

Administrator: J.E. Ratz

Assistant Administrators
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Financial Services

J.P. Holder,
Patient Services

T.J.D. West,
Hospital Services

W.V. Wilkinson,
Environmental Services

Department Heads

J.L. Zientek,
Admitting & Outpatient Services

J. Degen,
Building Services

P. McGee,
Chaplain Service

G. Wilkes,
Computer Services

C.D. Fernandes, D. Hill,
Financial Services

D. Frair,"
Housekeeping

C. Morrison,
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A. Buchanan,
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C. Hull, M. Morton,
D. Pestell,
Nursing Services

L.M. Rothney,
Nutrition

C. Kilgour,
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A. Connor,
Photography

L. Dutton,
Public Relations

S. Tyson,
Purchasing Services

A. Kind,
Radiation Therapy

K.K. Williamson,
Social Services

P. Nash,"
Volunteer Services

Auxiliary of The Princess Margaret Hospital and Lodge

President: Mrs. J. Morden"
Mrs. E. Sauro""

"New Appointment in 1986-87
""Retirement/Resignation
"""Honorary Member